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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/759,093	01/20/2004	Moon-hee Lee	SEC.889D	6935
20987	7590	09/08/2005	EXAMINER	
VOLENTINE FRANCOS, & WHITT PLLC ONE FREEDOM SQUARE 11951 FREEDOM DRIVE SUITE 1260 RESTON, VA 20190			KORNAKOV, MICHAIL	
			ART UNIT	PAPER NUMBER
			1746	

DATE MAILED: 09/08/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/759,093

Applicant(s)

LEE ET AL.

Examiner

Michael Kornakov

Art Unit

1746

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 June 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 22, 24-26 and 28-39 is/are pending in the application.
- 4a) Of the above claim(s) 30-39 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 22, 24-26, 28, 29 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☒ Claim(s) 22, 24-26, 28-39 are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

1. Newly submitted claims 30-39 are directed to an invention that is independent or distinct from the invention originally claimed for the following reasons: If initially presented with the steps, as recited in the instantly added independent claims 30 and 36, they would have been restricted from claim 22 as combination/subcombination, since the steps of methods recited in claims 30 and 36 are different from the steps of claim 22, and thus the subcombinations have the utility by themselves, as methods for surface modification, and the combination, as instantly presented does not require some particularities of the subcombinations for patentability.

Since applicant has received an action on the merits for the originally presented invention, this invention has been constructively elected by original presentation for prosecution on the merits. Accordingly, claims 30-39 are withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

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4. Claims 22, 24-26, 28, 29 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The recited in claim 22 "at separate point" is indefinite because the metes and bounds of such are not readily ascertainable. For examination purpose it is interpreted as a separate point of time. Claims 24-26, 28, 29 are rejected because of their dependency and failure to remove the ambiguity of parent claim.

5. Claims 22, 25, 26, 29 stand rejected under 35 U.S.C. 102(b) as being anticipated by Rose et al (U.S. 5,967,156), as per reasons of record.

Rose teaches treatment of semiconductor substrate by delivering an aerosol of frozen argon particles to the contamination on substrate's surface (physical cleaning), followed by the **separate step** of providing a flow of ozone and ultraviolet light in the vicinity of the substrate surface (chemical processing). The steps can be performed intermittently (Abstract). The aerosol can be delivered through the nozzle to produce the reaction region as wide as the substrate. The substrate can be rotated and translated linearly through the reaction region one or more times (col.5, lines 31-46, 62-64; col.13, lines 10-20, col.4, lines 17-20). Therefore, all the limitations of the instant claims are met by Rose.

6. Claim 24 stands rejected under 35 U.S.C. 103(a) as being unpatentable over Rose in view of JP3-159237.

With regard to claim 24, the skilled artisan would have found obvious to expose the substrate surface to IR light along with UV radiation in order to maintain appropriate surface temperature, while treating the substrate with ozone, thus enhancing the chemical processing, as motivated by JP'237, which indicates the benefits of simultaneous irradiation of substrates with UV and IR lights during cleaning.

7. Claim 28 is rejected under 35 U.S.C. 103(a) as being unpatentable over Rose in view of Swain et al (U.S. 5,125,979).

Rose remains silent about the use of agglomerated frozen particles to clean the substrate surface. However, the use of frozen agglomerates for cleaning is known in the art. Thus, Swain teaches the use of frozen agglomerates in order to enhance cleaning of semiconductor substrates. Therefore, one skilled in the art motivated by teaching of Swain would have found obvious to agglomerate the frozen particles of argon and treat the semiconductor surface with such agglomerated particles in order to enhance physical cleaning in the teaching of Rose.

Response to Arguments

8. Applicant's arguments filed 06/20/2005 have been fully considered but they are not persuasive.

The crux of Applicants arguments appears to hinge on the CLAIMS of Rose patent, alleging that "specifically, the Rose et al. patent contains eight (8) independent claims. The independent claims contain a common feature, that is, a flow of fluid and a

delivery of a second source occur simultaneously. Column 7, lines 49-62. In other words, the key concept of the Rose et al. patent lies in the requirement that both chemical and physical processes are simultaneously performed”.

This is not found persuasive, because the reference is not limited to preferred embodiments or bits and pieces, but should be evaluated as a whole for what it reasonably. Disclosed examples and preferred embodiments do not constitute a teaching away from a **broader disclosure or nonpreferred embodiments**. *In re Susi*, 440 F.2d 442, 169 USPQ 423 (CCPA 1971). “A known or obvious composition does not become patentable. A reference may be relied upon for all that it would have reasonably suggested to one having ordinary skill the art, **including nonpreferred embodiments**. *Merck & Co. v. Biocraft Laboratories*, 874 F.2d 804, 10 USPQ2d 1843 (Fed. Cir.), cert. denied, 493 U.S. 975 (1989). See also *Celeritas Technologies Ltd. v. Rockwell International Corp.*, 150 F.3d 1354, 1361, 47 USPQ2d 1516, 1522-23 (Fed. Cir. 1998). To this end, Applicants attention is drawn to the abstract, col.5, lines 31-46, 62-64; col.13, lines 10-20, col.4, lines 17-20, wherein Rose expressly discloses two SEPARATE steps of irradiating and jetting, which can be intermittently performed.

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

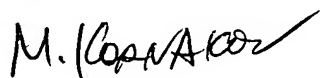
A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within

TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael Kornakov whose telephone number is (571) 272-1303. The examiner can normally be reached on 9:00am - 5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Barr can be reached on (571) 272-1414. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Michael Kornakov
Primary Examiner
Art Unit 1746

September 6, 2005

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